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ABSTRACT

The U.S. Department of Education's attempt to apply quality assurance methods to its own operations is discussed in this symposium. Three presentations, including handouts, charts, and outlines, describe the quality assurance techniques and research methodologies used by the Department and present some initial results of the program. The first presentation consists of a bibliography of published material relating business quality assurance concepts to federal administration. The second presentation gives the background, approach, and implementation strategies of the Department's quality assurance program. The program is based on participative problem solving among management, employees, and the union, and on the "closed quality loop" incorporating repeated quality assessments and improvements. Finally, the third author presents the results of two Department pilot projects in quality assurance--involving the review of discretionary-grant applications and the processing of travel vouchers--as well as the Department's training programs in quality assurance and a proposal for a joint business-university-government institute for quality assurance research. (Author/RW)

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ADMINISTRATION THROUGH QUALITY ASSURANCE

in the

DEPARTMENT OF EDUCATION

PREPARED FOR PRESENTATION
AT THE AMERICAN EDUCATIONAL
RESEARCH ASSOCIATION MEETING
April 13, 1981 Los Angeles, CA.

Office of Evaluation and Program Management
Division of Quality Assurance

Chairperson - Joseph G. Teresa, Ph.D.
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Presentor - William Renahan, J.D.
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EA 013 752

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SUMMARY

American and Japanese industry have been applying quality control techniques to improve profits while minimizing production cost. The Department of Education is attempting to apply quality control techniques and concepts to the administration of a Federal executive department concerned with the delivery of educational services. A search of the literature indicates a plethora of materials on the use of quality control techniques in industry but a scarcity of materials on the application of quality control techniques to human services and the administration of governmental units.

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CONCEPTUALIZATION OF THE EDUCATION DEPARTMENT'S QUALITY PROGRAM

INTRODUCTION

The purpose here is to describe some essentials of a proposed quality program for the Education Department. This quality program is proposed with the major objective of increasing the productivity of the Department of Education. The reader should note that the word productivity is defined as the ratio of acceptable outputs to inputs; quality assurance is defined as the knowledge and confidence that programs and services are being performed as designed; and quality control is defined as the analysis and progressive refinement of work products, processes, services and programs by identifying and acting upon detectable causes of variability, defects and errors with the objective of increasing or stabilizing quality. The basic premise or unifying principle upon which this proposed quality program should be erected is one espoused by the internationally known quality expert, Dr. W. Edwards Deming, who stated that an increase in quality results in an increase in productivity.

BACKGROUND

Current Problems

Congressional, public and private interests have resulted in new requirements for management to be more accountable and thus, able to report on the quality, efficiency and effectiveness of educational programs and services and employees.

In reviewing the difficulties of productivity improvements over the past six months, one might conclude that the only requirement for greater productivity is an increase in the number of employees and for current employees to work harder. Is this really the answer? Or is this only a very small part of the answer and does the major part of the answer lie elsewhere? What about learning to work smarter to increase productivity with the same or fewer resources?

Departmental Business Process

Wastes of human resources through redundancy of review and excess supervision is the major culprit which hinders increased productivity and not the lack of a good work ethic among employees. Our business process in many instances requires that the same task demands the attention of several levels of employees, therefore, adding to the cost of providing educational programs and services and thereby reducing productivity.

Until statistical methods and quality control techniques designed to improve Departmental work products, services, educational programs and productivity are integrated into the Departmental business process, no significant improvement can be made in the manner in which the Department conducts its business.

APPROACH

It is envisioned that the quality program will be designed and implemented in a stepwise manner. From simple quality control techniques to the more complex quality control techniques; from simple quality strategies to complex quality strategies; from simple quality assurance systems to complex quality assurance systems and from pilot quality programs to the Departmental quality programs. Furthermore, this approach lends itself readily to evaluation and assessment at each stage of implementation. It can not be over emphasized, the importance of having an internal assessment and evaluation mechanism in the creation and implementation of such a complex program when one considers the vast human and monetary resources to be committed.

Participative Problem-Solving Approach

What is participative problem-solving? It is a systems approach which involves all employees of an organization, from the highest to the lowest level, in solving the quality and productivity problems that are within their own areas of competence and responsibility and which provides the training to have them do so effectively.

Any quality program which is going to be accepted and implemented by Departmental employees must satisfy at least the following criteria:

- It must be economically viable.
- It must be psychologically viable.
- It must be methodologically sound.

Goals of the Proposed Quality Program

The major goal of the proposed quality program is that it provides a systematic means of promoting change towards increasing productivity within the Department. The proposed quality program should be designed and implemented with the following groups in mind:

- The Department
- Management
- Employees, and
- The Union

CONCEPTS OF PARTICIPATIVE PROBLEM SOLVING

Participative Problem Solving (PPS) is a system in which workers, union representatives, and management supervisors voluntarily participate in problem solving teams that meet on a regular basis. The teams are given appropriate training in the behavioral and technical aspects of problem solving and proceed to deal with work-area problems of methods, process, materials, morale, equipment, quality, etc. Managers and union leaders are organized into advisory groups for the teams and are trained to administer and facilitate the participative effort. Staff specialists such as quality control and personnel people, as well as managers, are trained to transfer some of their problems to the problem solving teams so that they can devote their own time to problems which require their advanced skill. This flow of information and cooperation increases the organization's effectiveness at all levels. As the abilities and influence of participants increases, problems of a more technical nature can be turned over to the teams to provide for their continuous involvement with significant projects.

The premise of PPS is that many more types of problems will be correctly identified and better solved by cooperation and group input than by individual effort. Secondly, the support for the solutions and the effectiveness of their implementation will radically improve when the people who are ultimately responsible for implementing them participate in the discovery process. People support what they help to create and they are more conscientious about doing things when they understand the rationale behind them. Furthermore, PPS expands the responsibility for making operating improvements to all members of the organization. An employee will sometimes follow an inefficient procedure at work that he would not consider doing at home, simply because he has been trained to view the change function as a prerogative of those over him.

A PPS system is a program with an identifiable purpose - to produce real solutions to real problems. In addition, this system yields a host of less tangible by-products which also produce tangible results. An improved quality or work life is demonstrated by a reduction in absenteeism and employee grievances and by an increase in job satisfaction and motivation. A PPS system favorably affects the climate of labor-management relations; union and management leaders develop a greater respect for one another when they work together on common problems in a non-threatening environment. PPS is a means of attaining quality of work life objectives because it provides solutions to operational problems in addition to promoting humanistic values.

Management's resistance to worker participation is primarily due to their concern about the effect of cooperation on the decision-making process. PPS allays this fear because it does not advocate a transference of authority. Implicit in Participative Problem Solving is the understanding that all operations involve two types of decisions - operational decisions that are made on a continual basis and decisions related to changing practices, which are made intermittently. With regard to operational decisions, PPS leaves intact the structure in which operational decisions are made by supervisors and management. PPS influences the environment; it allows the level of decision-making to be lowered if desired. As for decisions on changing current practices, the Participative Problem Solving system complements a two part process:

1. Development of alternatives to current practice
2. Decision to act and commit resources

The PPS system makes it possible for employees at all levels of the organization to develop alternatives to current practices. However, the decision to select among alternatives and to commit resources to implement changes is solely that of management at appropriate levels.

Union and employee resistance to PPS is rooted in their fear of job loss due to productivity improvements. In fact, PPS can increase job security by improving the position of a firm in its competitive market. The improvements in product quality and reductions in manufacturing costs translate into increased sales. In today's economy, such improvements and reductions are primarily acribable to methods changes, precisely the area in which Participative Problem Solving makes its greatest contributions. A PPS system promotes the economic health of an organization and its establishment should be a desired goal of management, union, and employee alike.

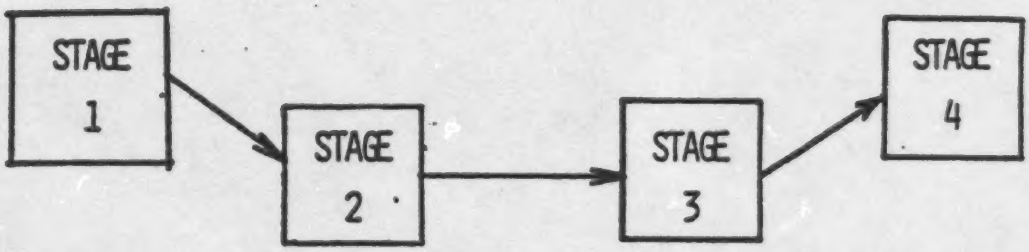
As an organization becomes trained and skilled in PPS, the system can make an even greater contribution to employment security. As a system which provides flexibility in manpower allocation, PPS supplies the technology for implementing a program of job maintenance. During periods of low market demand, a certain percentage of production man-hours in an organization is shifted to worker participation in improving effectiveness in the organization by means of problem solving. The traditional industrial response to changes in demand for products is a cut-back in production resulting in substantial layoffs of workers. As production increases, the workers are recalled and unemployment drops. Given the high economic and social costs of this traditional response to changes in market demand, the PPS alternative is in the interest of employees, unions, and management.

A major benefit of Participative Problem Solving is that it provides a systematic means of dealing with change. Most industrial problems are rooted in the organization's need to respond to the continuously changing environment in which it exists; thus, an organization's ability to respond to this need is crucial to its success. As an on-going and broad-based system, PPS facilitates organizational change.

QUALITY ASSURANCE IS DEFINED AS THE KNOWLEDGE AND CONFIDENCE THAT PROGRAMS AND SERVICES ARE BEING PERFORMED AS DESIGNED.

QUALITY CONTROL IS DEFINED AS THE ANALYSIS AND PROGRESSIVE REFINEMENT OF WORK PRODUCTS, PROCESSES, SERVICES AND PROGRAMS.

THIS IS ACCOMPLISHED BY IDENTIFYING DETECTABLE CAUSES OF VARIATION AND DEFECTS WITH THE OBJECTIVE OF INCREASING AND STABILIZING QUALITY.



A PHILOSOPHY OF QUALITY

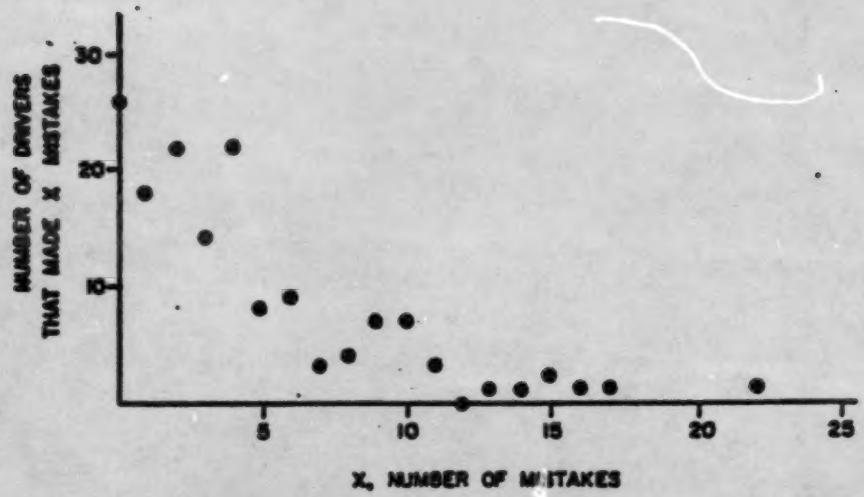
- QUALITY IS NEVER AN ACCIDENT.
- QUALITY REPRESENTS THE WISE CHOICE OF MANY ALTERNATIVES AND THE CUMULATIVE EXPERIENCE OF MANY EMPLOYEES IN ANY ORGANIZATION.
- IT DEMONSTRATES THE SUCCESS OF A DETERMINED PURPOSE.
- QUALITY WORK PRODUCTS, SERVICES AND EDUCATIONAL PROGRAMS CAN ONLY BE REALIZED BY SPECIFIC MANAGEMENT PROGRAMS DIRECTED TOWARD THE MARSHALLING OF EMPLOYEES TOWARD QUALITY ACHIEVEMENT.
- QUALITY IS A PHILOSOPHY, NOT A FUNCTION, AND IT MUST BE THE PRINCIPLE OF ANY ORGANIZATION.

ERRORS AND VARIATION

- CATEGORIES
- FREQUENCY DISTRIBUTIONS

CONCEPT OF VARIATION

- VARIATION IS A FACT OF NATURE.
- VARIATION ESTABLISHES A NEED FOR QUALITY CONTROL.
- THE "NEED" IS FOR CONTROL OVER THE BASIC CONFLICT.
- SAMENESS (UNIFORM QUALITY) DOES NOT EXIST.
- QUALITY IS A VARIABLE.



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ECONOMICS OF QUALITY

- QUALITY EFFECT ON COST OF OPERATIONS (I.E., COST OF CONTROL, FAILURES, REWORK TIME)
- COST EFFECTIVENESS

  BALANCE BETWEEN THE COST OF QUALITY AND THE VALUE OF QUALITY.

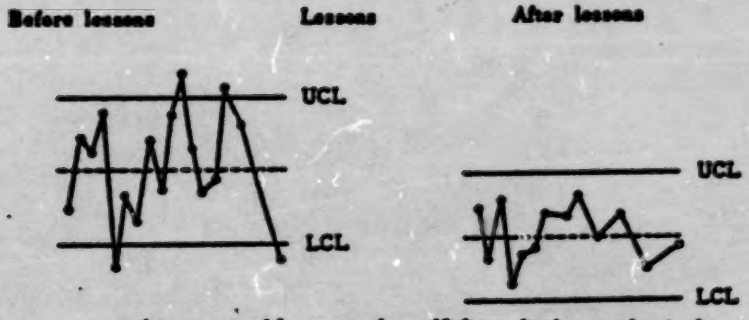
MANAGEMENT'S RESPONSIBILITIES FOR QUALITY

- TO ENHANCE THE INFLUENCE AND EFFECTIVENESS OF SUPERVISORS TO CONTROL THE QUALITY OF WORK PROGRAMS AND SERVICES.
- TO MAXIMIZE THE INPUT INTO DEPARTMENTAL PROGRAM-SOLVING BY FACILITATING THE FLOW OF EXPERTISE FROM ALL LEVELS OF THE DEPARTMENT.
- TO GENERATE GREATER COOPERATION AND COMMUNICATION AMONG MANAGERS.
- TO REDUCE THE DUPLICATION OF DECISION-MAKING.
- TO BUILD A MORE EFFECTIVE WORKING RELATIONSHIP BETWEEN THE UNION, EMPLOYEES AND MANAGEMENT.
- TO ENHANCE THE QUALITY OF WORK LIFE FOR EMPLOYEES BY PROVIDING AN OPPORTUNITY FOR EMPLOYEES TO BE INVOLVED IN SOLVING EVERYDAY PROBLEMS IN THEIR WORK ENVIRONMENT.

EMPLOYEES RESPONSIBILITIES FOR QUALITY

- TO HAVE MEANII.GFUL INPUT INTO DECISIONS THAT AFFECT THEIR WORK.
- TO IMPROVE RELATIONS AND COMMUNICATIONS AMONG EMPLOYEES.
- TO IMPROVE RELATIONS BETWEEN MANAGEMENT AND EMPLOYEES.
- TO MAKE WORK MORE INTERESTING.

QUALITY CONTROL CHART



Average weekly scores in golf for a beginner who took lessons before he reached a state of statistical control.

INTERRELATIONSHIP BETWEEN QUALITY AND PRODUCTIVITY

- BY INCREASING THE QUALITY OF WORK TASKS, SERVICES AND PROGRAMS THERE IS A CORRESPONDING INCREASE IN PRODUCTIVITY.
- "INCREASING THE QUALITY" IMPLIES THE OCCURRENCE OF FEWER MISTAKES OR ERRORS WHICH WILL RESULT IN LESS REVIEW AND REWORK TIME, THUS INCREASING PRODUCTIVITY.

PRODUCTIVITY IS DEFINED AS THE RATIO OF ACCEPTABLE OUTPUTS TO INPUTS.

STRATEGY PROPOSED:

THE STRATEGY FOR INCREASING THE PRODUCTIVITY AND QUALITY OF DEPARTMENTAL WORK ADDRESSES THE CHALLENGES DISCUSSED AND FOLLOWING PREMISES:

- CRITICAL ANALYSIS

  THERE EXISTS LITTLE CRITICAL ANALYSIS OF THE WAY BUSINESS IS CONDUCTED AND ACCEPTANCE OF CURRENT METHODS IS NEARLY UNIVERSAL. THIS RESULTS IN MANAGERS UNACCUSTOMED TO EVALUATING AND IMPROVING THEIR OPERATION.

- ANALYSIS OF LINES OF WORK

  EVEN IF THEY WERE, IMPROVEMENTS AT THE UNIT LEVEL MAY NOT RESULT IN OVERALL IMPROVEMENT. THE LINE OF WORK MAY REQUIRE THE COMBINED EFFORTS OF SEVERAL MANAGERS AND MAY IMPACT SEVERAL PROCESSES OR SYSTEMS.

- REAL GAINS IN PRODUCTIVITY

  REAL GAINS IN PRODUCTIVITY RESULT FROM BALANCED CONSIDERATION OF AND IMPROVEMENTS TO THE ENTIRE SEQUENCE OF PROCESSES AND SYSTEMS IN A LINE OF WORK.

- ACCOUNTABILITY FOR MANAGEMENT

  CURRENTLY NO MECHANISM EXISTS FOR THE ACCOUNTABILITY FOR MANAGEMENT OF LINES OF WORK WHICH FLOW ACROSS ORGANIZATIONS AND UNITS.

Elements of the Closed Quality Loop

The above goals of the proposed Departmental quality program can be accomplished through participative problem-solving techniques, described above, and the application of the closed quality loop which shall be explained here. The closed quality loop is the cornerstone of the Departmental quality program. It is proposed as the major mechanism for initiating change in the manner in which the Department does its business. It is further proposed as a means by which Departmental managers, supervisors, and employees can be assured with a high degree of statistical confidence that work products can be sub-divided into sequences of operations, processes and tasks which are susceptible to quantitative mesurement and therefore, amenable to the closed quality loop. Figure 1 displays the essential elements of the closed quality loop.

In summary, the approach to the Departmental quality program incorporates the use of the participative problem-solving method while performing the elements in quality loop. The quality loop is closed indicating that this approach to quality improvement is a continuous and dynamic one. Top Departmental managers should encourage the cooperation of all senior and middle managers, supervisors, employees, and the union to cooperate to ensure the success of these approaches.

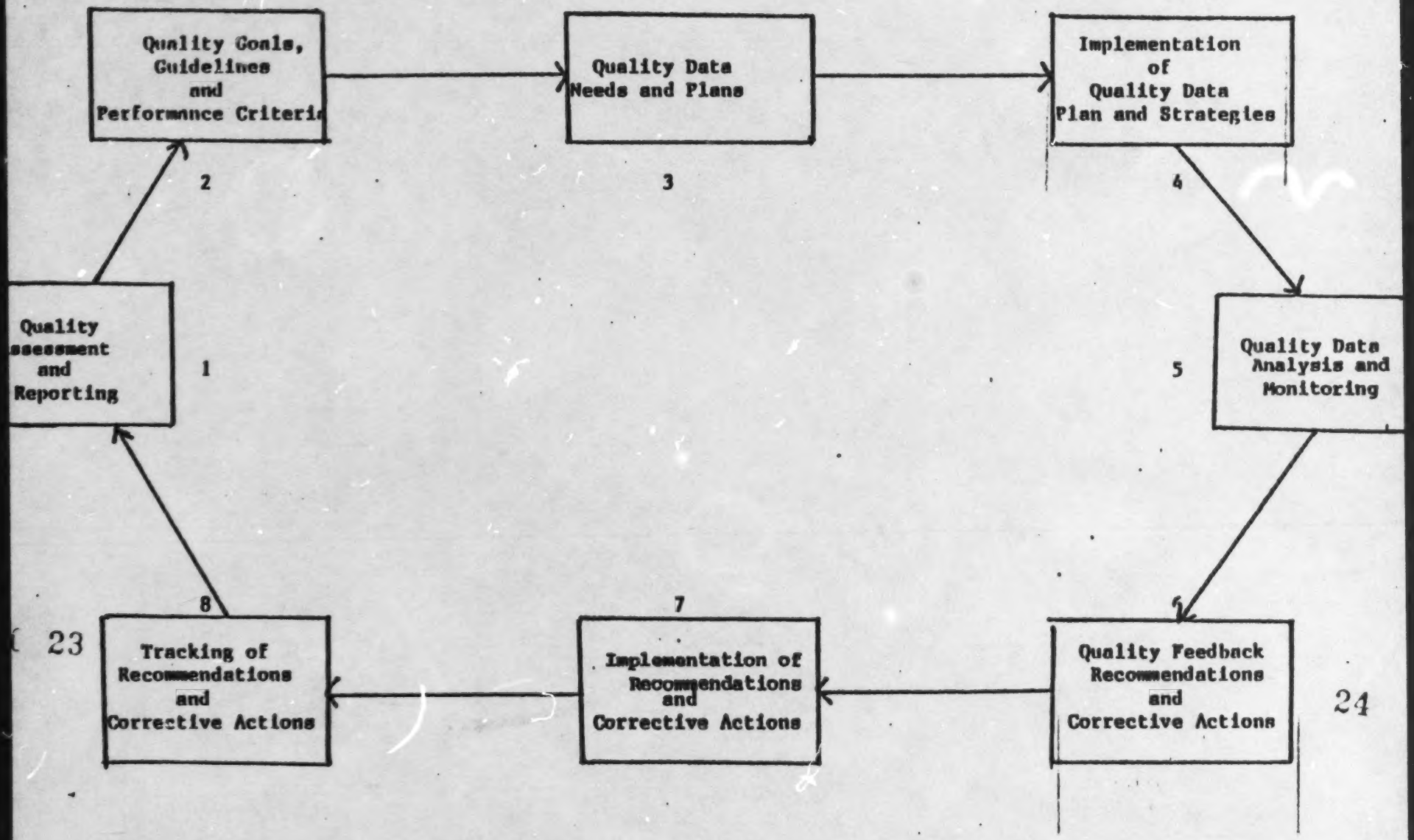
IMPLEMENTATION OF THE DEPARTMENTAL QUALITY PROGRAM

As suggested earlier in the approach section of this conceptualization paper, the implementation strategy of the proposed Departmental quality program is from the simple to the more complex. Table 1 displays the four stages in capsule form for the implementation of the Departmental quality program as follows:

- Management's Understanding and Commitment
- Management and Employment Training
- Implementation of Quality Pilot Projects
- Total Implementation

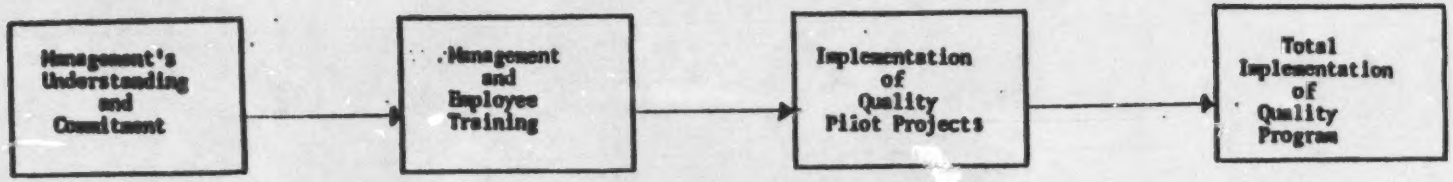
In summary, this conceptualization paper does not examine all of the issues inherent to creating a Departmental quality program, but was designed to touch at least upon the major issues which must be considered when conceptualizing such a complex quality program. It is hoped that the above discussion will encourage comments, suggestions and constructive criticisms resulting in the sharpening of the discussion and focus of issues contained therein.

ELEMENTS OF THE CLOSED QUALITY LOOP



DEPARTMENTAL QUALITY PROGRAM
STAGES OF IMPLEMENTATION

TABLE 1



Activities

1. Preparation of quality program brochures, posters and slide presentation.
2. Adoption of quality philosophy for Department.
3. Issuance of management quality directive.
4. Establish and commission quality council.
5. Establish quality technical advisory teams.
6. Establish quality recognition process.

Activities

1. SES manager and union orientation.
   a. Teach quality concepts and strategies.
   b. Explain and outline Department's affirmative quality program.
   c. Explain SES manager and union roles.
   d. Explain SES manager and union's responsibilities.
2. Non-Ses manager
   a. All the above
   b. Attend Quality control Seminar performed by Division of Quality Assurance.
   c. Attend Statistical Methods Seminar performed by Division of Quality Assurance
   d. Attend a Practicum Seminar.

Activities

1. Initiate pilot projects in support programs under Assistand Secretary for Management.
2. Perform pilot quality assessments.
3. Create pilot quality profile system.
4. Create pilot reporting and monitoring system.
5. Create a pilot tracking system for recommendations and corrective actions.

Activities

1. Expand implementation of quality program to all appropriate Departmental programs and services.
2. Expand training activities to lower ranked Departmental employees.
3. Expand quality assessments to appropriate Departmental programs and service areas.
4. Expand quality profile system.
5. Expand reporting and monitoring system.
6. Expand tracking system for recommendations and corrective actions.

PILOT PROJECTS

DISCRETIONARY GRANT PROJECT

DISCRETIONARY GRANT APPLICATION FIELD READERS SURVEY

Purpose of the Study

The purpose of this study was to gather baseline information on the Department's use of field readers in the discretionary grant application review process. As a result of this survey specific areas of interest can be further explored and other alternatives investigated.

Questions to be Addressed

The study is based upon the following set of questions deemed to be important by the Office of Management.

1. What previous studies have been undertaken regarding the review process?

2. What discretionary grant programs use reviewers and to what extent?

3. At what stage of the review process are outside/inside reviewers used?

4. To what extent are the reviewer's evaluation used?

5. Are there standards for evaluation that reviewers follow and are these consistent from one program area to another?

6. What are the legislative requirements regarding the use of Grant Application Reviewers?

7. What are the required qualifications in order to qualify to be a Grant Application Reviewer?

8. What purpose does it serve to use Grant Application Reviewers?

9. What are the total costs incurred by using Grant Application Reviewers?

10. Are there other alternatives or ways of using Grant Application Reviewers?

These above questions were not viewed as being all inclusive. Other questions were also addressed because they were related to these original questions. While answers to these additional queries will probably be useful in subsequent analyses, they were not critically examined in this study. There is a copy of the questionaire in appendix A.

Questionnaire Administration

The target group for this questionnaire was the six program areas and their discretionary grants. The list was comprised of approximately 74 programs. All programs received questionnaires; the response rate was 96 percent (N=71). Several methods were used to achieve such a high response rate from busy program personnel. A program contact person was identified and served as our liaison for the survey. Each survey was hand delivered to the contact person with a deadline date for responses. Several followup reminder telephone calls were made if the surveys hadn't been returned by the specified deadline.

Questionnaire

After careful design, a draft questionnaire was sent to various professionals for comment. Those reviewing the document included program as well as staff personnel. As a result of this feedback, the questionnaire was revised. A pilot test of the draft was then carried out in each of the six program areas after which a final version was developed. The questionnaire dealt with four general subjects: 1) Selection of Field Readers; 2) Evaluation of Field Readers Performance; 3) The Review Process and 4) Cost.

Findings

Selection of Field Readers

Generally, discretionary grant programs used field readers to assist in the selection process. Their use is based on the provisions in EDGAR (Section 100a 217). See appendix B for a complete summary of responses by programs of non-government field readers which are not required by provisions in EDGAR.

All programs maintain rosters of potential field readers with the majority using a manual system of information retrieval; however, automated systems are maintained by the Office of Postsecondary Education (75%) and the Office of Vocational and Adult Education (14%). See appendix C* for a complete summary of responses by program area of government versus non-government field readers.

Evaluation of Field Readers

The solicitation of non-government field readers and government field readers was accomplished through a variety of means: 1) by form letters to institutions; 2) by program officiers; 3) unsolicited (volunteers) and 4) names suggested by various people. See appendix D for a complete summary of responses by program areas.

The specific expertise and/or qualifications for both non-government and government field readers were categorized along three dimensions: 1) subject area; 2) experience; 3) other. As might be expected subject area and experience were pertinent to each program area. Other expertise that program officials cited were writing capability, earned degrees and decision making skills. See Appendix E for a summary by program area.

Review Process

The program staff had a variety of responses on how to modify the current field readers selection process. These suggestions ranged from computerizing information on field readers (i.e. resume', geography, enthnicity, etc.), adhering to current policies and procedures, and to revising the Department of Education's form that must be used for consultants so that it is applicable to field readers and

*The distinction between government and non-government field readers is that anyone not directly employed by the Federal government is categorized as non-government.

to the program. One program area, the Office of Elementary and Secondary Education's Emergency School Aid Act suggested eliminating the field reader process. See appendix F for a complete summary of responses by programs.

Many of the program areas had specific recommendations about changing and improving the review process. Some felt that there weren't adequate funds for field readers in order to allow them the amount of time to complete the evaluation adequately. Others felt that the program staff should have more input into the final decisions about funding. Some thought that the selection criteria needs to be modified in order to reflect special program needs. See appendix G for a complete summary of responses by programs.

Cost

The total obligated dollars for the field readers process are outlined below.

Table 1/ Obligated Cost for Field Readers FY80*

OESE	$397,731
OBEMLA	227,800
OPE	760,800
OSERS	586,400
OVAE	97,600
OERI	650,000
Total Cost	$2,720,331

As the data from Table 1 indicates the Office of Postsecondary Education spent the most money during FY80. OPE also had the largest number readers with 853 (see Table 2 for the total breakdown of field readers by Department of Education office). The Office of Special Education and Rehabilitative Services had the fewest number of field readers (71), yet spent $586,400. The Office of Vocational and Adult Education had by far the smallest obligated cost for field readers ($97,600), but had 479 readers.

As Table 2 indicates, in addition to the total costs there was other interesting information which has an indirect relationship to costs of the field reader process.

1. There appears have been a disproportionate number of application packages being mailed to potential eligibles in relation to the total number of applications actually received for grant competition awards.

2. There appears to have been a disproportionatly small number of grants awarded in relation to those applications reviewed by field readers.

There were a few suggestions given to the question of alternative ways of reviewing application proposals other than through using field readers. The two most frequently suggested responses included the use of internal professional staff and the writing of objective criteria that don't require subjective judgements.

*These figures were obtained from the FY80 Obligation Based Operating Plan which is based on the Object Class Report.

TABLE 2

TOTAL NUMBER OF FIELD READERS

Name of Each Grant Making Activity Under This Program	Total Number of Non-Government Field Readers	Total Number of Government Field Readers	Total Number of Field Readers	Number of Readings Per Application		Average Number of Days Field Readers Reviewed Applications		Average Number of Applications Read Per Day	
				Mean	Range	Mean	Range	Mean	Range
OESE	272	25	297	3.25	3-5	6.07	5-10	6.14	2-15
OBEMLA	174	9	183	3.4	3-6	4.7	3-6	3	2-4
OPE	808	45	853	3	3-6	4.3	2.5-5	27.5	3-281
OSERS	65	6	71	9	6-12	5	5	5.5	3-8
OVAE	456	23	479	3.4	3-6	3.31	1.5-15	9.3	6-15
OERI	387	20	407	9.8	3-30	4.3	3.5-5	30.44	6-180
Total	2,162	128	2,290	5.3	3-30	4.6	1.5-15		2-281

As the information from the above table indicates there were 2,162 non-government field readers and 128 government field readers, making a total of 2,290 field readers. Field readers were most used by the Office of Post-secondary Education, Office of Vocational and Adult Education and the Office of Educational Research and Improvement.

The average number of readings per application is 5.3 with the average number of days field readers reviewed applications at 4.6.

TABLE 3

PERCENTAGE USEFULNESS OF
FIELD READER'S RECOMMENDATIONS

	Very Useful				Useful				Not Useful		
	10	9	8	7	6	5	4	3	2	1	MEAN SCORE BY PROGRAM
OESE		28.5%			7%					64%	3.6
OBEMLA	50%	50%									9.5
OPE	50%	5%	5%		11%	28%					8.0
OSERS		50%		50%							8.0
OVAE	16.7%	50%	33%								8.8
OERI	45.5%		18%	27%	9%						8.5

The above table indicates all but one program area felt that the field reader's recommendations were useful in the selection of the most qualified grantees. The exception was the Office of Elementary and Secondary Education.

Recommendations

These recommendations are not based solely on the findings from this survey but are supported by an aggregate of reviews of previous studies, interviews with program staff, and the examination of our agency's awards processes.

There are four alternatives discussed here regarding the field readers process for the discretionary grant application awards process.

Alternative 1:

Leave the current process in place with minor modifications.

Discussion:

Many program managers were satisfied with the current field reader system indicating that it worked well for them and would only suggest minor changes. Other managers indicated that the current field reader system was overly restrictive and almost eliminated the manager's discretion to make grant awards to grantees not selected by field readers irrespective of need. It is proposed that modifications be made to the field reader system which will allow for greater management discretion in the grant award processes.

Alternative 2:

The legislation and regulations (EDGAR) need to be modified and/or rewritten.

Discussion:

Most managers felt that because of the regulations and legislation there was little change that could be made in the current review process. Rewriting regulations would allow the Department to standardize the review process across program areas and change the requirements for the selection and use of field readers.

Alternative 3:

Modify the field reader process with greater use of government employees as field readers and establish a pre-application proposal.

Discussion:

This alternative would help to lessen costs to the government by using more Federal employees from the program area. Also, a pre-application proposal would help to eliminate the large number of applications being sent in. This helps the prospective grantee as well as the Department in eliminating the large number of applications in relation to those funded. Its proposed that a pool of Federal employees be maintained by the Department so that depending on a program managers need qualified staff could be identified.

Alternative 4:

Complete reconception of the field reader function and its place in the discretionary grant process.

Discussion:

It appears that there are a number of vested interests in the field reader process and that changes will be met with objections by the various program areas. If substantial changes are going to be made a reconceptualization of the field reader function will aid in cost savings, better utilization of current staff and improved efficiency in the grants award process.

Recommendation:

It's recommended that alternative three be implemented as soon as possible. Based on at least one-half of every field reader's panel being government employees this could save the Department approximately 1.3 million dollars.

It's also recommended that other alternatives to the current process be undertaken (i.e., computer based modeling, lottery, etc.)

Objectives

- To describe the current system of processing travel vouchers within the Executive Offices and Finance Office.
- To collect and analyze data relative to voucher processing for the purpose of determining the number and types of errors, the location and reason for their occurrence and the time and effort required to correct them.
- To find out where Executive Offices perceived errors.
- To utilize the analysis findings to propose system modifications which will result in fewer errors and a decrease in the average processing time with an increase in productivity.
- To measure the effects of system modifications and establish Quality Control procedures to insure their effectiveness.

METHODOLOGY

It was decided that all travel vouchers would be tracked from their receipt in the Executive Offices to their final resolution. Only vouchers for which the Government owed the traveler were analyzed.

A "travel voucher data collection log" (see attachment) was designed for use by the Executive Offices. The offices agreed to complete an entry on the log for each travel voucher processed by their respective offices during a two week data collection period. The time frame encompassed was the last two weeks of September, 1980. Some vouchers were included which had earlier logged in dates because they still had not left the Executive Office. The postings to the Executive Offices travel voucher logs provided two essential dates relative to elapsed time.

1) The date the voucher was received in the Executive Office.

2) The date the voucher was forwarded to the Finance Office or returned to the traveler for the correction of errors.

Elapsed time is measured in work days. Weekends and Federal holidays were excluded in calculating the time. The Travel Voucher Data Collection Log Form was also used to determine the number and types of errors that impeded the processing of the vouchers. Twelve Executive Offices participated in the study.

Based on the information provided by the Executive Offices a universe of 294 vouchers were gathered and tracked through the Finance Office. Finance (see attachment) logs were checked daily to record the receipt of vouchers from the Executive Offices. Unfortunately, only 194 vouchers have been recorded as having completed all process in the Finance Office.

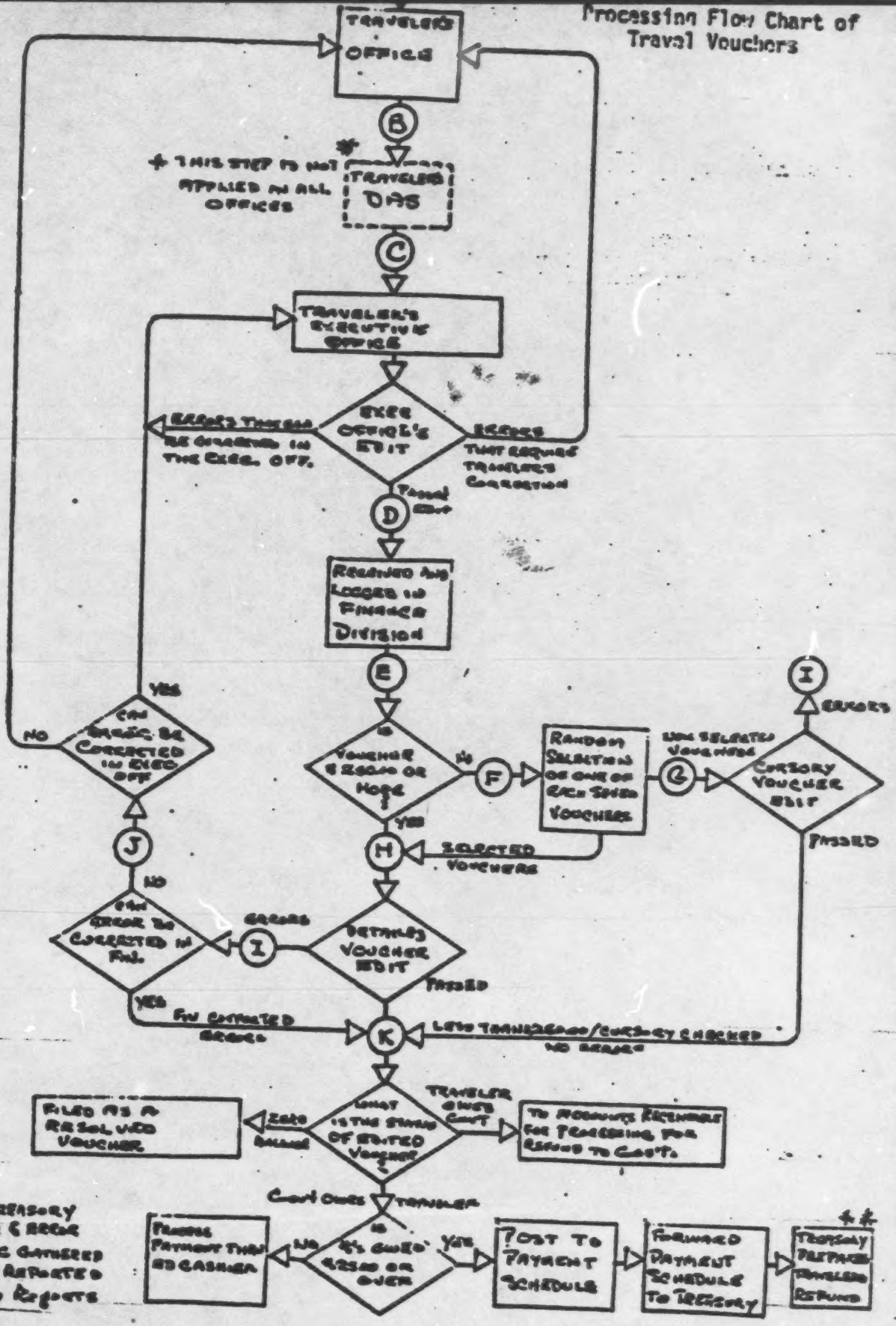
In order to best follow the disposition of each travel voucher, this process was divided into three logical time frames. Each frame for each voucher was measured and analyzed by elapsed time.

1) Elapsed time from entry to exit from Executive Office.

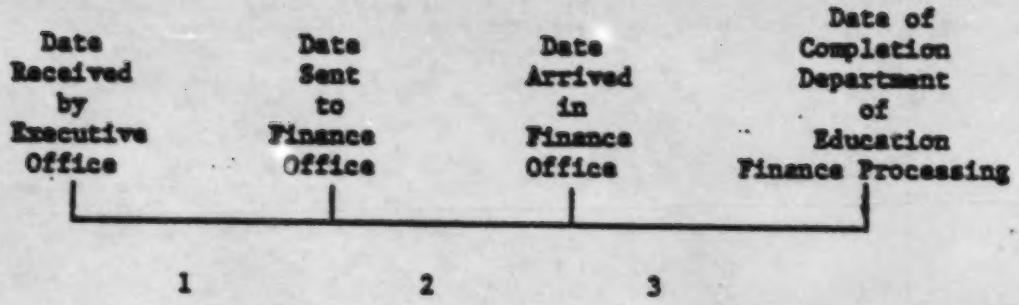
2) Elapsed time from Executive Office to entry to Finance Office.

3) Completion through Finance processing system.

Processing Flow Chart of Travel Vouchers



TIME FRAME OF ANALYSIS



BEGINNING OF TRAVEL VOUCHER PROCESS

The travel voucher is the document with which the traveler provides an itemized accounting of his/her expenses. Regulations require receipts to substantiate certain expenses. "Clearances /justifications" substantiate other expenses. Generally, all of the necessary data and receipts are compiled by the traveler. This information is then given to a clerical employee who prepares the voucher.

*Deputy Assistant Secretary

This step is not applied in all offices.

The Traveler, and if required, his/her supervisor signs the voucher and it is forwarded to the Executive Office.

ELAPSED TIME FROM ENTRY TO EXIT
FROM EXECUTIVE OFFICE

Executive Office examines the voucher to insure:

1) Adequate Receipts
2) Justifications
3) Clearances

→ Are Attached

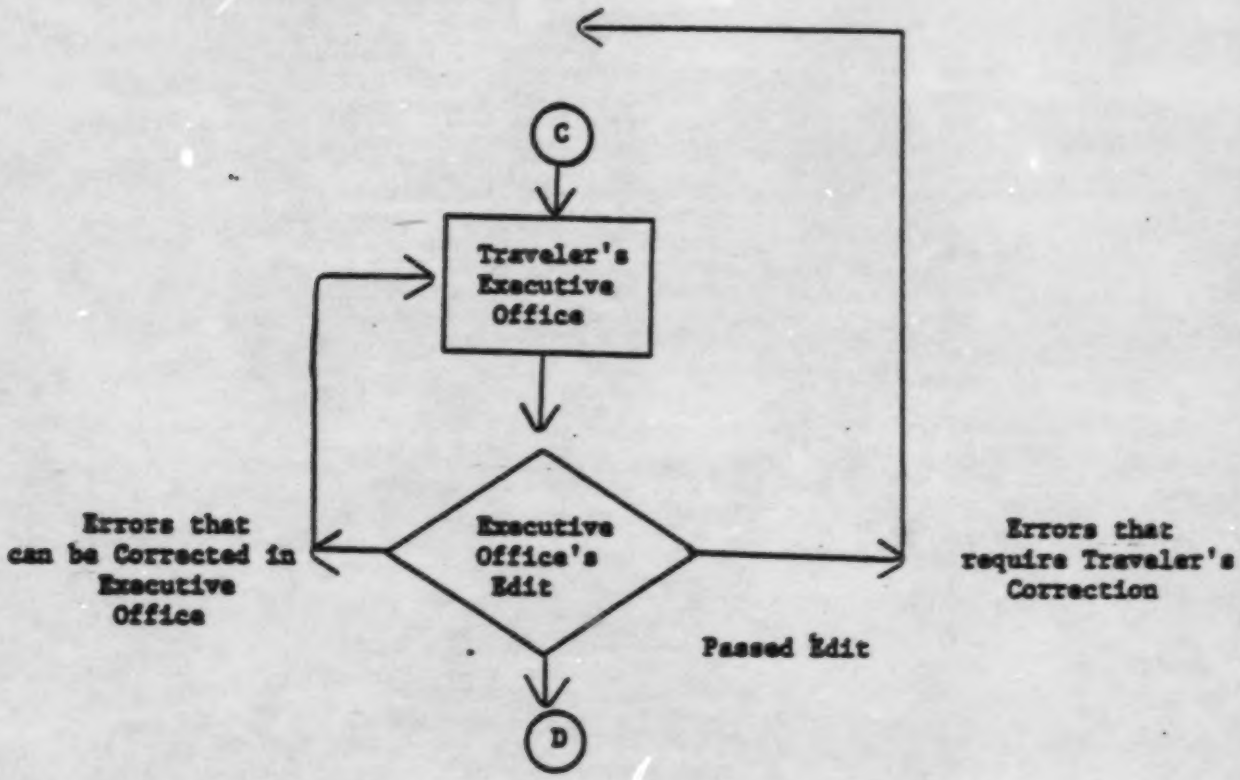
4) Accounting Data
5) Computation

→ Are Correct

6) Proper Signatures

→ Are Affixed

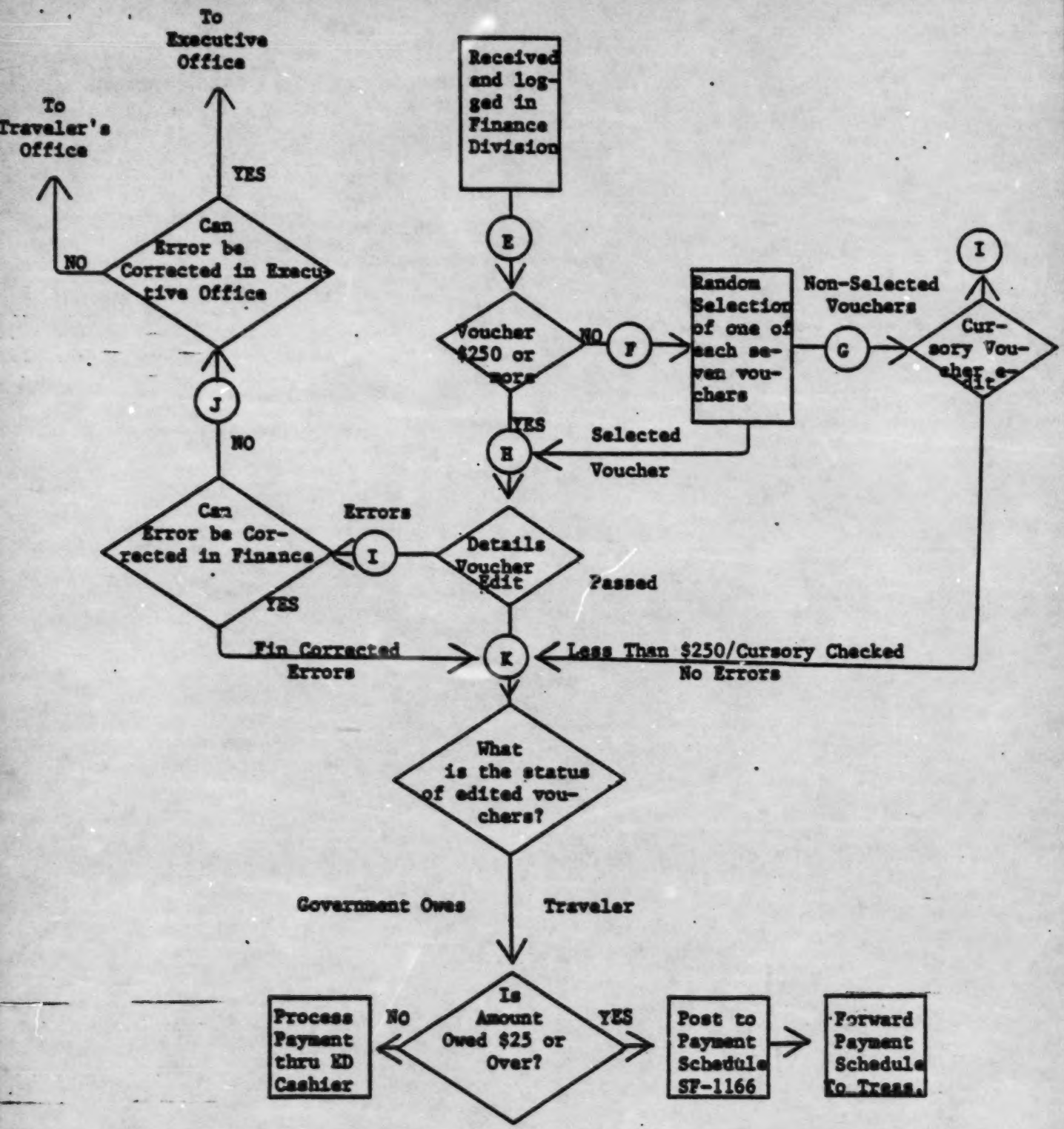
Vouchers passing this examination are then signed by the Executive Office and forwarded to the Finance Office.



ELAPSED TIME FROM EXECUTIVE OFFICE
TO ENTRY TO FINANCE OFFICE

Passed Edit by Executive Office

Vouchers are forwarded from the Executive Office to Finance Office.


To Executive Office
To Traveler's Office
YES
NO
Can Error be Corrected in Executive Office
Received and logged in Finance Division
E
Voucher $250 or more
NO
F
Random Selection of one of each seven vouchers
Non-Selected Vouchers
G
I
Cursory Voucher edit
YES
Selected Voucher
H
J
NO
Can Error be Corrected in Finance
Errors
I
Details Voucher Edit
Passed
YES
Fin Corrected Errors
K
Less Than $250/Cursory Checked No Errors
What is the status of edited vouchers?
Government Owes
Traveler
Process Payment thru ED Cashier
NO
Is Amount Owed $25 or Over?
YES
Post to Payment Schedule SF-1166
Forward Payment Schedule to Treas.

COMPLETION THROUGH FINANCE PROCESSING

Upon receipt in the Finance Office vouchers are "logged in" and sorted into two categories:

1) Vouchers greater than $250 receive a thorough examination;

2) Vouchers less than $250 are examined in one of two ways;

   a) A statistical sample (1/7 of the total) receive a thorough examination.

   b) The remainder received a "cursory" review.

Travel vouchers fall into three categories:

1) Traveler owes the Government (Accounts Receivable)

2) Government owes the Traveler (Accounts Payable)

3) Neither Traveler nor Government owes money (Zero Balance)

This study will only examine accounts payable vouchers. Accounts payable vouchers fall into two categories:

1) If the traveler is owed less than $25, the voucher is forwarded to the cashier. The traveler is then notified that his money may be picked up there.

2) If the traveler is owed more than $25, the Finance Office creates a Schedule of Payments (SF-1166). SF-1166 lists the traveler's name and the amount owed. This form is then forwarded to the Regional Disbursing Office of the Department of Treasury, which issues the check to the individual traveler in payment of the voucher amount.

TRAVEL VOUCHER DATA COLLECTION

Organization: _____

Voucher Number (1)	Traveler/ Organization (2)	Date Received (3)	ERRORS							DISPOSITION		Comments (11)
			Signatures (4)		Computations (5)	Receipts (6)	Acct. Data (7)	Clear./ Just. (8)	Other (9)	To Finance (10A)	To Traveler (10B)	
			Trv.	Sup.								

47

48

NUMBER OF VOUCHERS FOUND TO HAVE ERRORS BY EXECUTIVE OFFICES

ORGANIZATION	VOUCHERS WITHOUT ERROR	VOUCHERS WITH ERROR	TOTAL NUMBER VOUCHERS	PERCENTAGE ERROR
Office of Vocational and Adult Education	56	0	56	0%
Office of Inspector General	15	0	15	0%
Office of Educational Research & Improvement	20	20	40	50%
Office of Institute of Museum Services	4*	2	6	33%
Office of Planning and Budget	8*	3	11	27%
Office of Management	26	18	44	41%
Office of Special Education and Rehabilitative Services	27	16	43	37%
Office of Student Financial Assistance	14	5	19	26%
Office of Secretary	19	32	51	63%
Office of Public Affairs	4 *	1	5	20%
Office of Non-Public Education	0 *	1	1	100%
Office of Civil Rights	1 *	2	3	66%
Total	294	100	294	34%

*READER SHOULD BE AWARE OF SMALL SAMPLE SIZE

EXECUTIVE OFFICE TRAVEL VOUCHER LOG ERROR SUMMARY

ERRORS

ORGANIZATIONS	SIGNATURES		COMPUTATIONAL ERRORS	RECEIPTS MISSING	ACCOUNTING DATA MISSING	JUSTIFICATION	OTHER	TOTAL NUMBER OF ERRORS
	TRAVELERS	SUPERVISION						
OFFICE OF VOCATIONAL AND ADULT EDUCATION	0	0	0	0	0	0	0	0
OFFICE OF INSPECTOR GENERAL	0	0	0	0	0	0	0	0
OFFICE OF EDUCATIONAL RESEARCH & IMPROVEMENT	0	0	12	2	0	2	2	18
OFFICE OF INSTITUTE MUSEUM SERVICES	1	0	0	1	0	0	0	2
OFFICE OF PLANNING AND BUDGET	0	0	2	0	0	1	2	5
OFFICE OF MANAGEMENT	0	7	7	2	4	0	1	21
OFFICE OF SPECIAL EDUCATION AND REHABILITATIVE SERVICES	1	0	7	0	10	4	0	22
OFFICE OF STUDENT FINANCIAL ASSISTANCE	0	0	3	1	0	0	1	5
OFFICE OF SECRETARY	0	0	15	1	13	4	9	42
OFFICE OF PUBLIC AFFAIRS	0	0	0	0	0	0	1	1
OFFICE OF NON-PUBLIC EDUCATION	0	0	1	0	0	0	0	1
OFFICE OF CIVIL RIGHTS	0	0	1	1	1	0	1	4
TOTAL	2	7	48	8	28	11	17	121

EXECUTIVE OFFICE TRAVEL VOUCHER
LOG ERROR SUMMARY

	NUMBER OF ERRORS	PERCENTAGE
Travelers Signature	2	2%
Supervisors Signature	7	6%
Computational Errors	48	39%
Receipts Missing	8	7%
Accounting Data Missing	28	23%
Justification	11	9%
Other	17	14%
TOTAL	121	100%

TRAVEL VOUCHERS
RETURNED TO TRAVELER

ORGANIZATIONS	With Error	Return to Traveler
Office of Vocational and Adult Education	0	0
Office of Inspector General	0	0
Office of Educational Research & Improvement	20	5
Office of Institute Museum Services	2	0
Office of Planning and Budget	3	1
Office of Management	18	10
Office of Sepcial Education and Rehabilitative Services	16	16
Office of Student Financial Assistance	5	4
Office of Secretary	32	8
Office of Public Affairs	1	1
Office of Non-Public Education	1	0
Office of Civil Rights	2	0
Total	100	45

TIME FRAME OF ANALYSIS

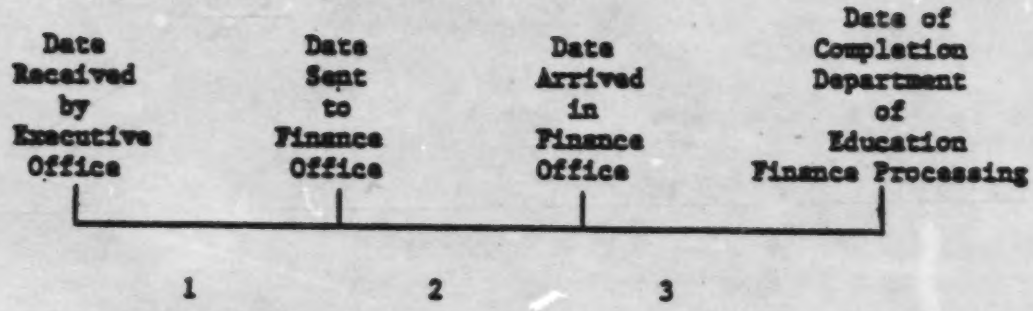
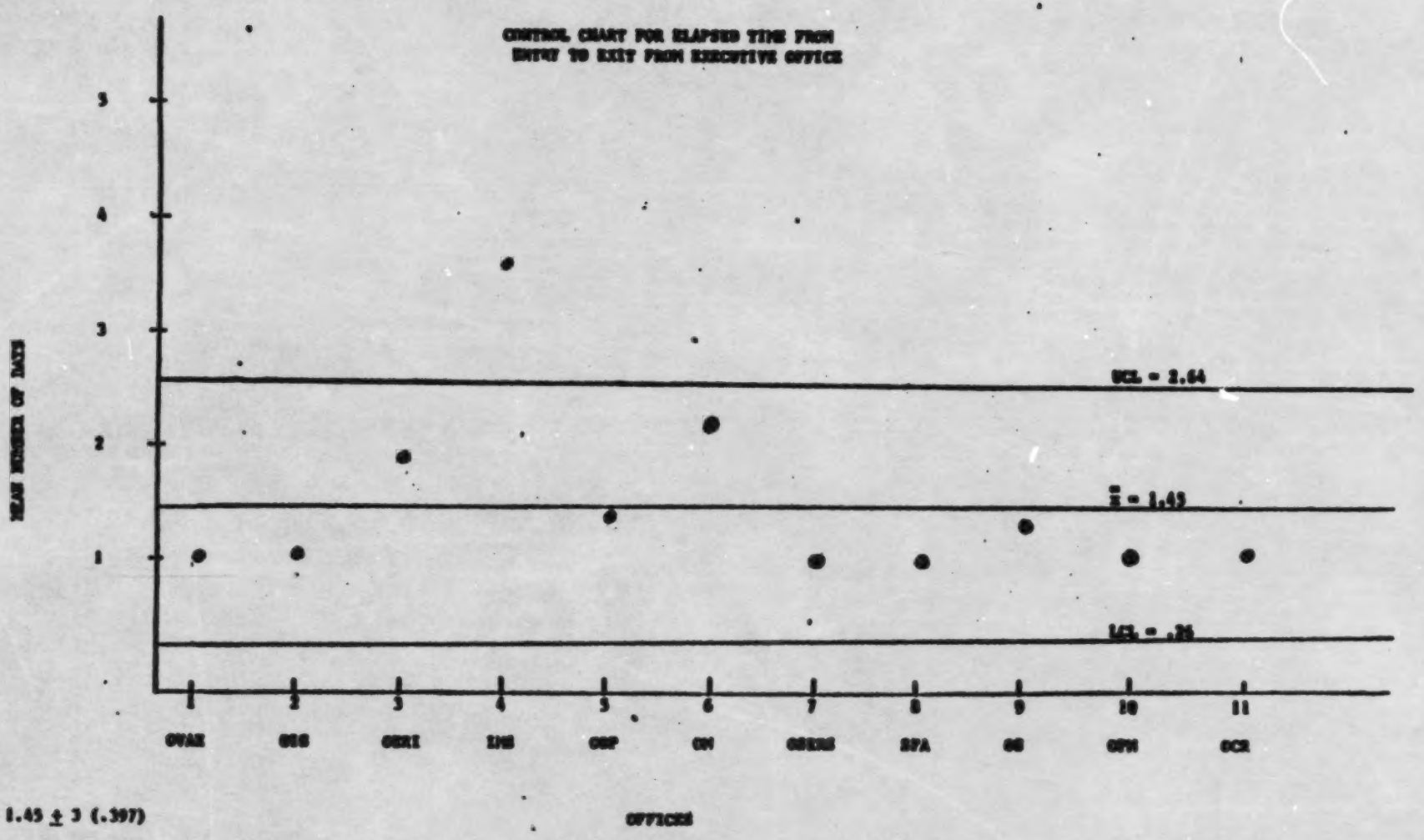


TABLE - MEAN SCORES FOR THE DEPARTMENT OF EDUCATION ON THREE DIMENSIONS

	Mean Scores for Eleven Offices for Elapsed Time from Entry to Exit from Executive Office	Mean Scores for Eleven Offices for Elapsed Time from Executive Office to Entry Finance Office	Mean Scores for Eleven Offices for Completion Through Finance Processing
Office of Vocational and Adult Education	1	1.47	22.00
Office of Inspector General	1	3	28.6
Office of Educational Research & Improvement	1.69	1.71	25.24
Office of Institute of Museum Services	3.5	1	21.4
Office of Planning and Budget	1.36	1.8	22.67
Office of Management	1.84	1.16	20.94
Office of Special Education and Rehabilitative Services	1.05	1.42	21.36
Office of Student Financial Assistance	1	1	24.67
Office of Secretary	1.39	1.24	19.41
Office of Public Affairs	1	2	28.33
Office for Civil Rights	1	1	--
Central Line Mean Scores for small samples of unequal size (X)	1.45	1.46	22.11

CRITICAL LINE MEAN SCORES FOR
SMALL SAMPLES OF UNEQUAL SIZE

	Mean Score
Elapsed Time from Entry to Exit from Executive Office	1.45
Elapsed Time from Executive Office to Entry Finance Office	1.46
Completion through Finance Processing	22.11

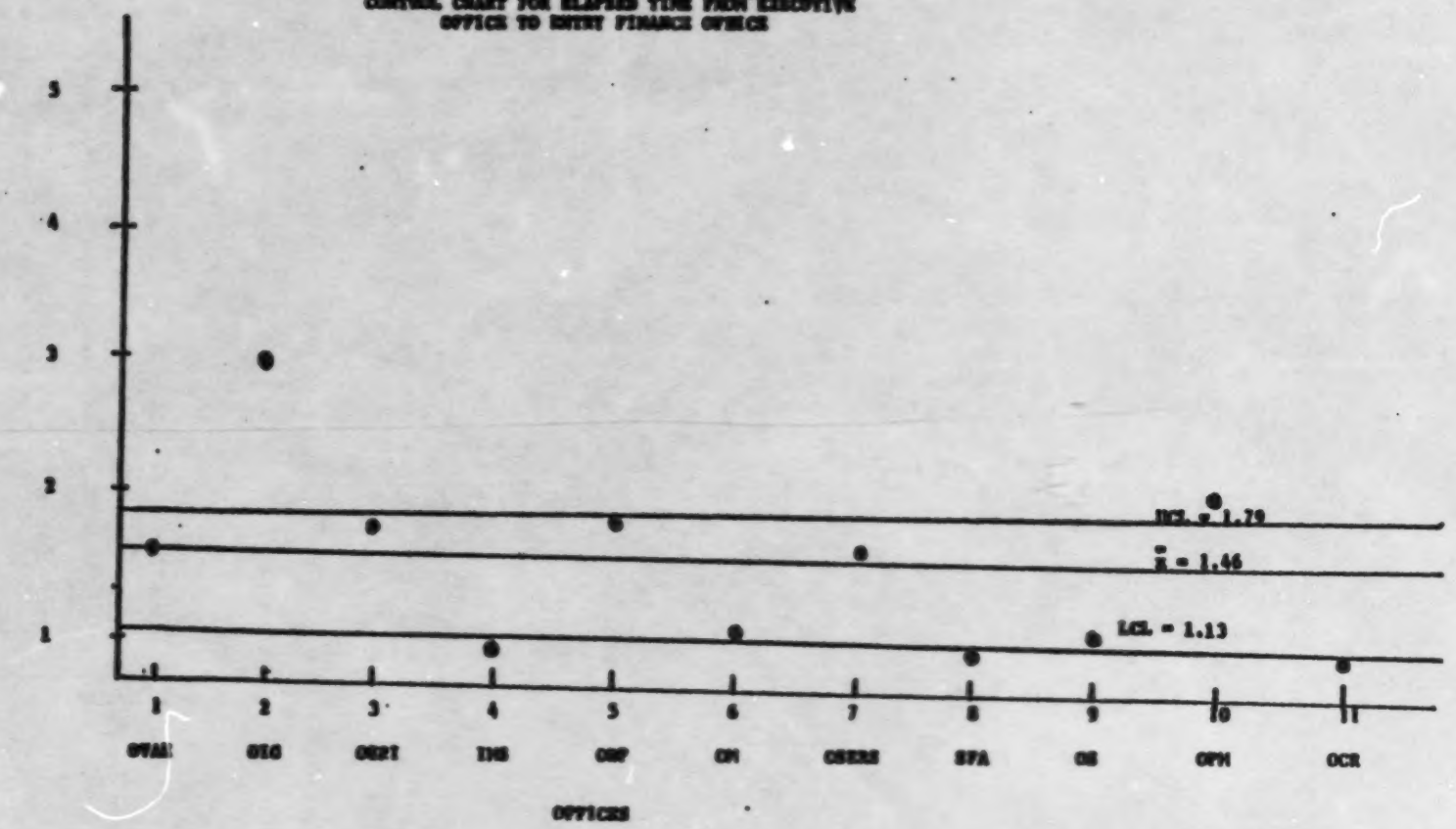


58

59

1.45 ± 3 (.397)

1.45 ± 1.19

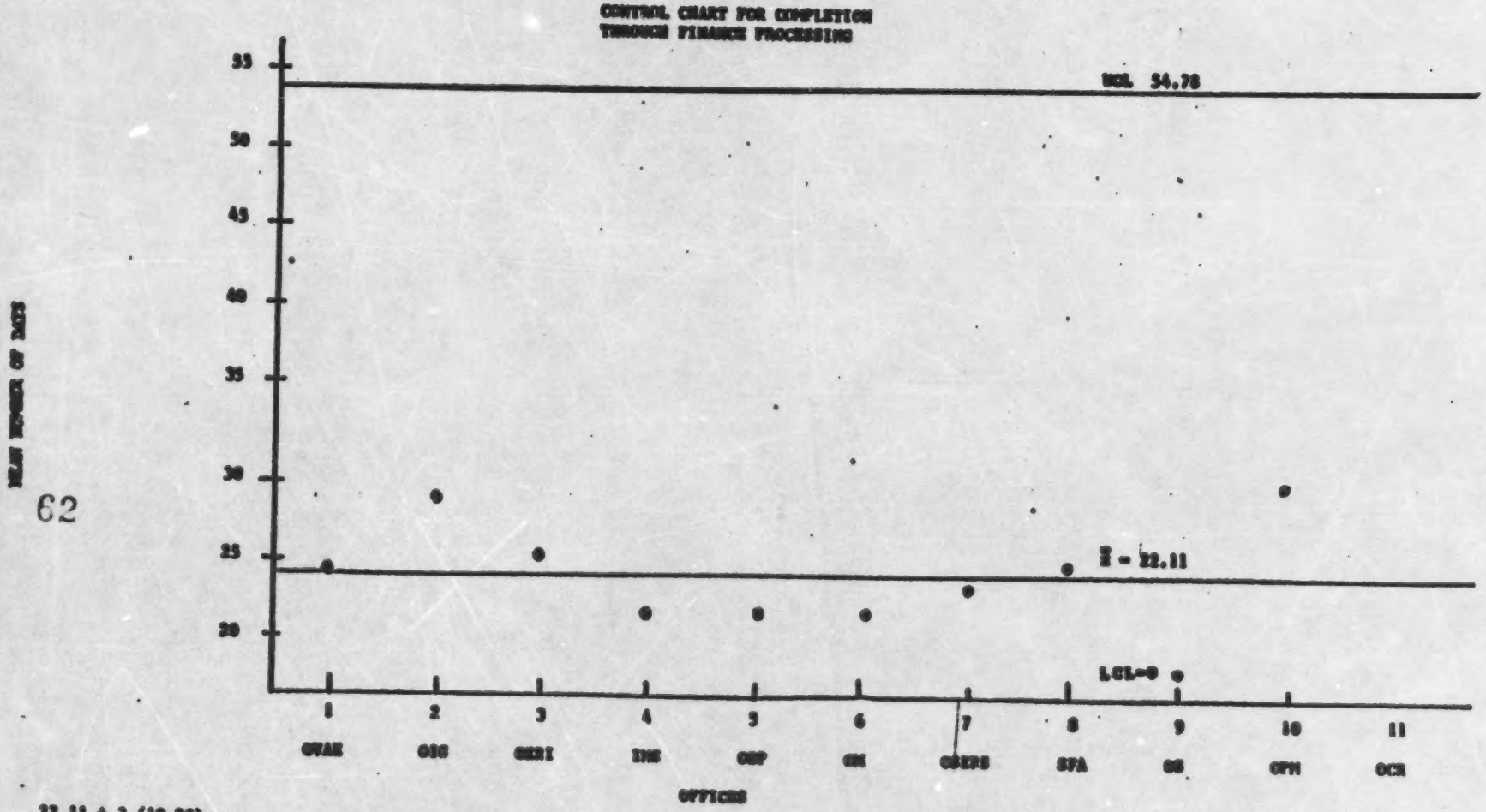


60

61

$1.46 \pm 3\ (.11)$

$1.46 \pm .33$



62

63

22.11 ± 3 (10.89)

22.11 ± 32.67

FINDINGS

- From the universe of 294 vouchers, the Executive Offices detected 121 errors on 100 vouchers.

- Of the 100 vouchers containing errors, 45 contained errors necessitating their return to the traveler.

- In most cases the errors on the remaining 55 vouchers were corrected by the Executive Offices and sent to the Finance Office within one day.

- Office of the Secretary had the largest number of vouchers with errors (32) and the greatest percentage with errors (63%) found in the Executive Office.

- Office of Vocational and Adult Education did not have any vouchers which had errors found in the Executive Office.

- Computational errors were the greatest source of errors with 48 (39% of all errors)

- Missing accounting data was the second greatest source of errors with 28 (23% of all errors)

- Among organizations with more than 8 vouchers the Office of Management took the greatest number of days (1.84) for elapsed time from entry to exit from Executive Office: Office of Vocational and Adult Education took the least number of days (1).

- Among organizations with more than 8 vouchers, the Office of Educational Research and Improvement took the greatest number of days (1.71), for elapsed time from Executive Office to entry Finance Office; the Office of Management took the least number of days (1.16).

- Among organizations with more than 8 vouchers, the Office of the Inspector General took the greatest number of days (28.6) for elapsed time for completion through Finance processing; the Office of the Secretary took the least number of days (19.41).

- There is no uniform method of processing or checking travel vouchers. The degree of control and the thoroughness of the examination of these vouchers vary greatly between Executive Offices.

- While the rules for travel are constantly changing there is no effective official mechanism for informing travelers of these changes.

- There is a general lack of controls and written procedures for all phases of voucher processing. Travelers, clerks and secretaries often prepare vouchers without knowledge of the regulations.

- Travel voucher errors are of two types:

  1) Errors which can be corrected in the Executive Offices and Finance Division - i.e. computational and accounting data.

  2) Errors which necessitate returning the voucher to the traveler - i.e. inadequate receipts and justifications/clearances; missing signatures.

TRAINING PROJECTS

SEMINAR A

FUNDAMENTALS OF QUALITY ASSURANCE AND PRODUCTIVITY

I. Understanding Quality Assurance and Productivity

a) Definition of Quality Assurance

b) Definition of Productivity

c) The Interrelationship between Quality and Productivity

d) A Philosophy of Quality

e) Types of Errors and Variations

II. Management Awareness and Commitment

a) Developing of Quality Consciousness among Management

b) Developing of Quality Consciousness among Operating Personnel

c) The Economics of Quality

d) Management's Responsibilities for Quality

e) Employee's Responsibilities for Quality

f) Management's Need to Increase Productivity

III. The Fundamentals of Quality Assurance

a) The Extent of the Quality Assurance Function

b) Planning for Quality

c) Specification of Quality Policies, Procedures, and Guidelines

d) Quality Assurance Assessment

e) Quality Assurance Training

f) Measurement and Quality Assurance

g) Analysis and Corrective Actions

h) Monitoring and Reporting Quality

i) Feedback and Redesign

IV. The Essentials of Quality Control Techniques

a) Understanding of Basic Statistical Techniques

1. Frequency Distribution
2. Measures of Central Tendency
3. Measures of Variation
4. Statistical Hypothesis Testing
5. Time Series Analysis

b) Understanding Shewhart's Statistical Control Charts:

1. Control Charts for Attributes
2. Control Charts for Variables

c) Elements of Acceptance Sampling

1. Lot-by-lot Sampling
2. Multiple Sampling Approaches

d) Quality Circles and Their Application

e) Other Quality Control Techniques

V. How to Establish an Effective Quality Program

a) Setting the Objectives and Determining the Scope of the Program

b) Conceptualizing and Defining the Quality Program and Support Systems

c) Establishing Primary Responsibilities for each Aspect of the Quality Program

d) Selecting and Coordinating the Quality Improvement Team or Teams

e) How to Introduce the Notion of Participative Problem Solving to Team Members and/or Clients

f) How to Select, Train and Evaluate the Performance of People Implementing the Quality Program

g) Motivation of Participants in the Quality Team or Teams

h) Defining Quality Sub-activities of the Quality Program

i) How to Prevent, Identify and Correct Defects and Problems

j) Check and Balance Procedures

k) Documenting the Quality Program

VI. The Essential Elements of Productivity

a) The Concept of Working Smarter as Opposed to Working Harder

b) Increase in Quality Implies an Increase in Productivity

c) Productivity Measurement

d) Implementing a Productivity Program

e) Productivity and Quality of Working Life

DIVISION OF QUALITY ASSURANCE SEMINARS
ON
SURVEY RESEARCH METHODOLOGY

INTRODUCTION

I. The Research Process

Major steps in Research
Ten steps in planning Research

II. Formulation Of A Problem

Selecting a topic for Research
Formulating Hypotheses
Establishing Working Definitions

III. Research Design

Formulative or Exploratory Studies
Descriptive Studies
Studies testing Causal Hypotheses

IV. Measurement

Measuring Instruments - Variations in Scores
Validity of Measurement
Reliability of Measurement
Scales of Measurement

V. Sampling

Definitions and Concepts Probability Sampling
Non-Probability Sampling

VI. Data Collection

Unstructured Observations
Structured Observations
Questionnaires
Interview Schedules
Projective Mehtods
Tests of Social Attitudes

VIII. Using Available Data Source Material

Statistical Records
Other Studies

IX. Scales

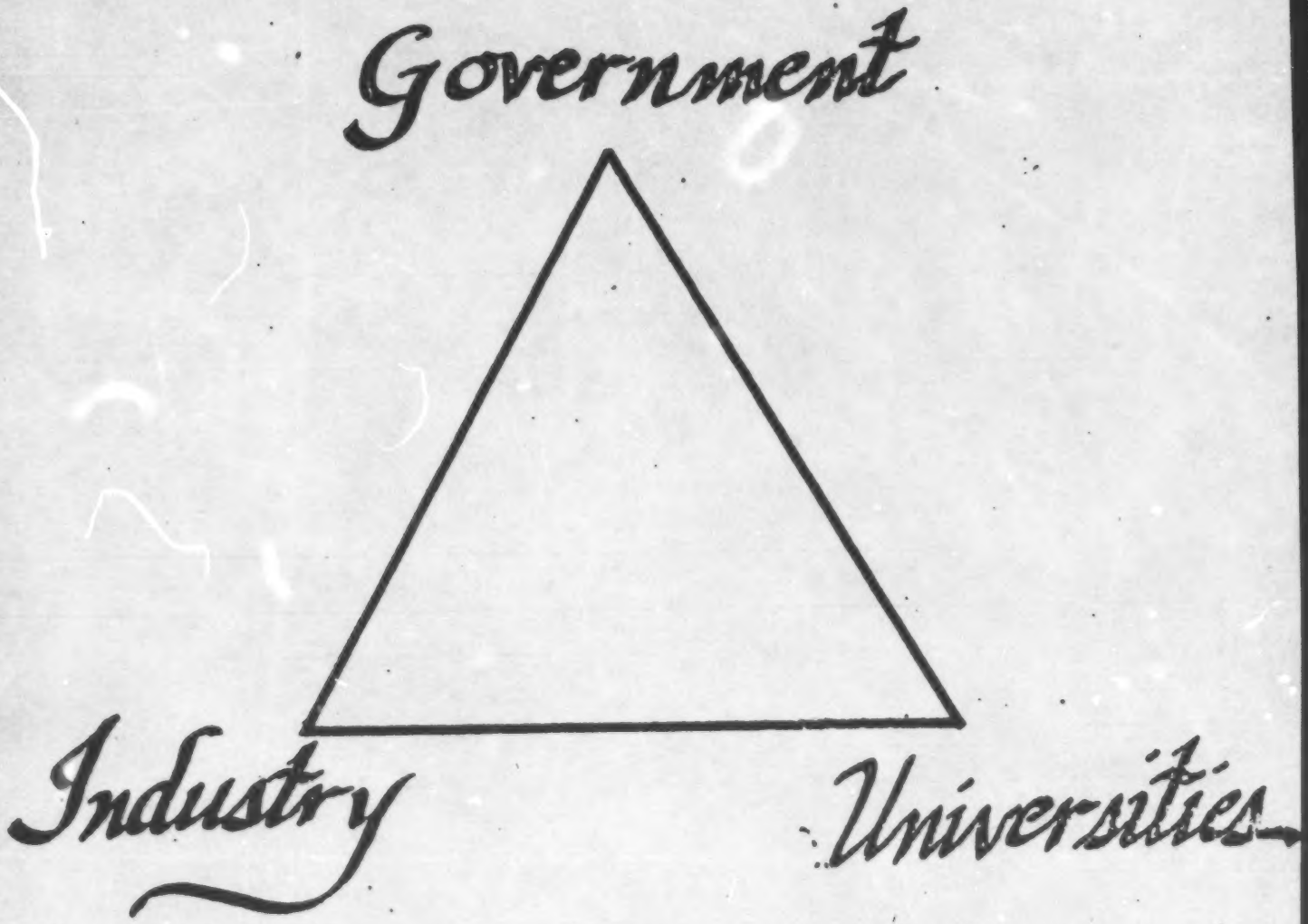
Rating Scales
Scaling Techniques

X. Analysis And Interpretation

Statistical Analysis of Data
Use of non-quantified Data
Library Computer Programs

XI. Research Report

Contents


Government
Industry
Universities

The Research Institute for Quality Assurance

at

The University of Maryland University College

The proposed research institute at the University of Maryland University College will be a separate center and will be housed within the Graduate Studies Division. This will allow interaction with faculty of the Master of General Administration program as well as a recently proposed graduate program in Program Evaluation and Organizational Assessment.

The purpose of the Research Institute will be to conduct basic and applied research on variables associated with Quality Assurance and Productivity, to disseminate the results of such research, to conduct educational programs on all aspects of quality assurance and productivity, to make available expertise to business/industry and government on specific quality assurance and productivity problems, and to serve as a site for visiting researchers and business or government individuals who wish to spend time to investigate specific problems of quality assurance and productivity.

The purposes cited above may be further delineated as seen in Table 1. These are only samples of possible activities.

The proposed organization of the Research Institute is presented in Table 2. Since the Institute is conceived as a joint effort between government, business/industry, and the University, the Board of Governors will be representative of these constituencies. The following is the breakdown of the proposed composition of the Board suggested:

- o Industry (3)
- o Academic (2)
- o Government (3)
- o Research Institute (3)
- o [illegible] (2)

This 13 person group will provide guidance to the Institute and aid in its development.

Funding for the Institute will be obtained from the following sources:

1. Government grants
2. Business and industry grants
3. Foundation grants
4. Direct service contracts (education, research and consulting)

The schedule for implementation of the Research Institute is as follows:

1. Initial six month Planning Grant	May 30, 1981
2. Formation of the Institute	January 1, 1982
3. Initiation of grant and contract activities	April 1, 1982

The planning grant is key to the overall effort. It is desired that during this phase, the following activities occur:

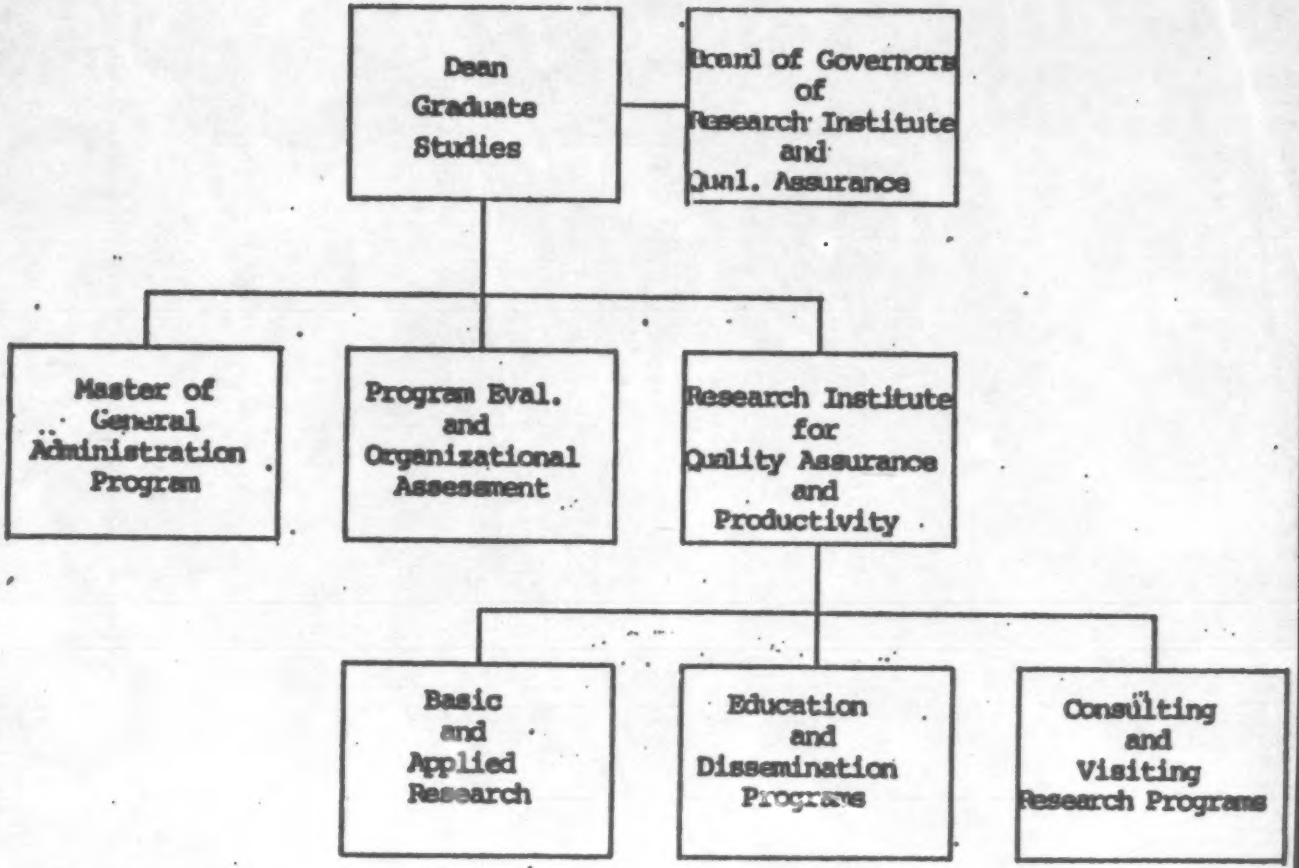
1. Formation of a study group which will meet at least twice during the six month period to detain the future activities of the Institute which include seeking cooperation from all constituencies.
2. Conduct workshops/short courses in the areas of quality control and productivity for governmental agencies and the industrial/business community.
3. Completion of a final report detailing the state of quality assurance and productivity in the U.S. including a report of the study group. The final report will also include the need for the Institute and facilities (automation laboratory).

Table 1

Activities of the Research Institute

asic and Applied Research	Dissemination	Education	Consulting Service	Visiting Researcher Program
. Management process for improvement of quality assurance and productivity . Statistical controls . Assessment procedures . Methods for the determination of program outcomes . Human factors problems on automated equipments . Cultural differences in methods for quality assurance and productivity . Application of robotic technology	1. Yearly publication on advances in quality assurance & productivity 2. Availability of research and study reports.	1. Conduct of non-credit short courses & seminars on quality assurance and productivity 2. Visiting lecturer program	Availability of expertise for the solution of quality assurance & productivity in business and government	Availability of resident visiting positions for a maximum of four months for the purpose of interacting with center staff and to initiat research or other activities

TABLE 2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Studies
Board of Governors
of
Research Institute
and
Qual. Assurance
Master of
General
Administration
Program
Program Eval.
and
Organizational
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Research Institute
for
Quality Assurance
and
Productivity
Basic
and
Applied
Research
Education
and
Dissemination
Programs
Consulting
and
Visiting
Research Programs